

CLAIMS

What is claimed is:

1. An apparatus to selectively remove a conductive layer from a substrate, the apparatus comprising:
 - a potentiostat having a counter electrode terminal to couple to a counter electrode, a reference electrode terminal to couple to a reference electrode, and a working electrode terminal to couple to the substrate, the substrate having sub-micron interconnect features;
 - a tank to store an electrolyte solution; and
 - wherein during selective removal of the conductive layer, the counter, reference, and working electrodes are immersed into the electrolyte solution and a potential difference between the substrate and the reference electrode is maintained at a fixed value and the selective removal of the conductive layer is ended when a second current value between the substrate and the counter electrode is substantially lower than a first current value.
2. The apparatus of claim 1, wherein the apparatus is configured to vary a current between the substrate and the counter electrode to maintain the potential difference between the substrate and the reference electrode at a fixed value.
3. The apparatus of claim 1, wherein the conductive layer of the substrate is etched on a conductive barrier layer surface of the substrate.
4. The apparatus of claim 1, wherein the conductive layer includes nickel.
5. The apparatus of claim 1, wherein the sub-micron interconnect features include a noble metal.
6. The apparatus of claim 1, wherein the noble metal includes copper.
7. The apparatus of claim 1, wherein the barrier layer includes titanium nitride.